

## Bivariate stats 1 Answers

1)

(ii) (a)  $y = 81.0x + 1370$  (G1)(G1)  
[2 marks]

(b) Let the least number sold to make a profit be  $a$ .  
Then income =  $120a$  (A1)

Production costs =  $81.0a + 1370$  (A1)

Thus  $120a > 81a + 1370$  (A1)

$$a > \frac{1370}{120 - 81}$$

$a > 35.1$  (A1)

Hence, to make a profit, the factory must produce at least 36 chairs each week. (A1)

[5 marks]

2) (ii) (a)  $y = 9.76x + 166$  (A3)

[3 marks]

(b) (i) unit cost (or cost of producing one box) (R1)

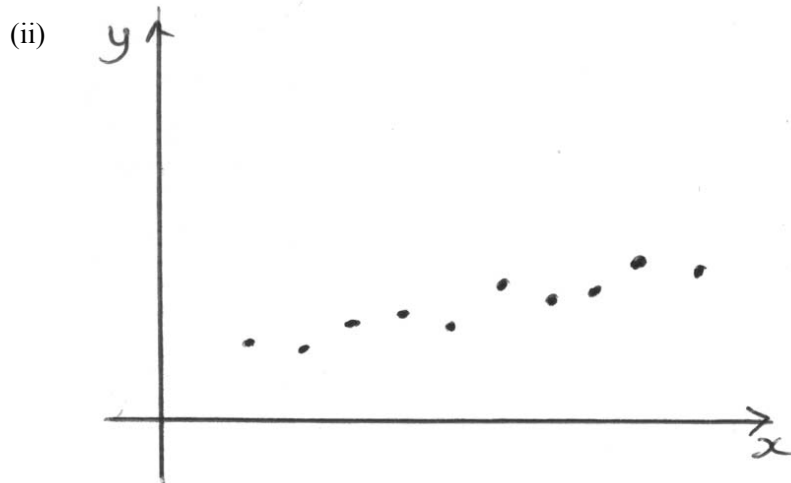
(ii) fixed costs (R1)

**Note:** Award (R0)(R0) for strictly geometric interpretations.

[2 marks]

3)

(iii) (a) (i) minimum value =  $-1$ ; maximum value =  $1$  (A1)(A1)



(A1)

(iii) linear, strong positive (A2)

[5 marks]

(b) (i) regression line passes through  $(\bar{x}, \bar{y})$  (M1)

gradient of regression line =  $\frac{49.2 - 46}{660 - 500} = 0.02$  (A1)

equation of regression line:  $\frac{y - 46}{x - 500} = 0.02$  ( $\Rightarrow y = 0.02x + 36$ ) (A1) (N3)

(ii)  $y = \$ 47$  (A1)

[4 marks]

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4)

- (i) (a)  $y - \bar{y} = \frac{s_{xy}}{s_x^2}(x - \bar{x})$  (M1)
- $y - 60 = \frac{36}{3^2}(x - 10)$  (A1)(A1)
- $\Rightarrow y = 4x + 20$  (A1) (N2)
- [4 marks]**
- (b) (i)  $x = 20 \Rightarrow y = 4 \times 20 + 20$  (M1)
- $= 100$  (A1) (N0)
- (ii) (a)  $r = \frac{s_{xy}}{s_x s_y} = \frac{36}{3(15)}$  (M1)
- $= 0.8$  (A1) (N1)
- (b) The value of  $r$  indicates (R1)
- fairly good**, (or equivalent)
- but (R1)
- not exceptionally** (moderately, fairly) **strong**
- linear correlation. Thus,  $x = 20$  (A1)
- does not guarantee**  $y = 100$  (is not reliable)
- (Use discretion for equivalent meanings.) (A1)
- [7 marks]**

5)

- (i) (a) E (A1) (N1)
- (b) C (A1) (N1)
- (c) F (A1) (N1)
- (d) A (A1) (N1)
- (e) D (A1) (N1)
- [5 marks]**